

REMARKS

The Examiner's Office Action of December 23, 2003 has been received and its contents carefully reviewed. The Applicant would like to thank the Examiner for the consideration given to the above-identified application. Moreover, the Applicant would like to thank the Examiner for the consideration to the Preliminary Amendment filed September 25, 2003. The arguments presented therein are hereby incorporated by reference.

Claims 10, and 12-18 were pending prior to this amendment for consideration. By this Amendment, claims 10, 14, 25, and 18 have been amended. Accordingly, claims 10 and 12-18 are still pending for consideration in the present application, of which claims 10 and 18 are independent. In view of the actions above and the remarks below, reconsideration and allowance of the pending claims is respectfully requested.

First, Applicant seeks to correct an unintentional omission in the Preliminary Amendment filed September 25, 2003. In particular, in claims 14-15, the previously presented terms "III-V" were omitted from the term "Group - ". Thus, Applicant herein amends claims 14 and 15 to return them to their previously presented wording by replacing "Group - " with "Group III-V."

Referring now to the detailed Office Action, claims 10 and 12-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art in this application in view of Treat et al. (U.S. Patent 5,412,678, hereinafter referred to as Treat).

35 U.S.C. § 103(a) states in relevant part that "a patent may not be obtained...if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."

In response to the Examiner's rejections under § 103(a), Applicant herein further amends independent claims 10 and 18 and thus respectfully requests reconsideration and immediate allowance of claims 10 and 12-18.

In particular, with respect to claims 10, 12, 14-15, and 18, the Examiner asserts that Fig. 5 of the present application discloses a semiconductor laser device of the prior art

comprising a first semiconductor laser structure made up of a first multiple layers (103A, 104A, 105A) including a first active layer 104A and a second semiconductor laser structure made up of a second multiple layers (106A, 107A, 108A) including a first active layer 107A. Furthermore, the Examiner stated that the admitted prior art lacks an etching control layer. Thus, the Examiner asserts that Treat teaches a GaInP etching control layer (etch stop layer j in Fig. 4A, see col. 6, l. 17). Finally, the Examiner asserts that, for the benefit of improving the crystallinity of the multiplayer structure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the prior art an etching control layer as taught by Treat.

The present invention relates to a semiconductor laser device including the following features:

- i. First multiple semiconductor layers made of III-V compound, the V element is one selected from the group consisting of As and P,
- ii. Second multiple semiconductor layers made of III-V compound, the V element is another selected from the group consisting of As and P, and
- iii. An etching control layer having a V element that is different from the V element comprising of the first multiple semiconductor layers.

According to the structure of the present invention, the first multiple semiconductor layers in the first semiconductor laser structure have a different composition than the composition of the second semiconductor layers in the second semiconductor laser structure. The different compositions of these structures can be utilized to independently determine a film thickness, carrier concentration and composition of n-cladding layers, active layers and p-type cladding layers between the first semiconductor laser structure and the second semiconductor laser structure. The first semiconductor laser structure may have an oscillation wavelength different from that of the second semiconductor laser structure, and thus, the laser characteristics, such as radiation angle, temperature characteristics and an operating current, can be determined differently from each other.

Treat fails to disclose or render obvious the above features of the present application. Instead, Treat teaches a structure in which two semiconductor laser devices having AlGaInP cladding layers (c) are formed on a substrate (see column 5, line 58 – column 6, line 53, and

Fig. 4). According to Treat, the first semiconductor laser structure is made of the same kind of material (i.e. AlGaInP) as the second semiconductor laser structure. Thus, the semiconductor laser structures taught by Treat cannot attain the same functionality as the semiconductor laser device of the present invention because the semiconductor laser structures of the present invention have different compositions.

Moreover, in the present invention, the etching control layer can be used for etching to form the first semiconductor laser structure by removing the first region of the first multiple semiconductor layers. This is evidenced by the feature of the present invention that the V element of the etching control layer is different from that of the first multiple semiconductor layers.

In contrast, the etch stop layer of Treat is needed for accurately etching to form a ridge (see Fig. 4A). In particular, Treat teaches that “pairs of mesas are then formed by masking pairs of stripes with a material such as SiN₄ before etching through layers k, l, and m down to etch stop layer j. Thus, the etch stop layer taught by Treat is utilized for a completely different purpose than the etching control layer of the present invention, among other distinctions.

Therefore, it would not have been obvious to a person of ordinary skill in the art to apply the etch stop layer of Treat to the prior art to create the innovative and useful etching control layer of the semiconductor laser device of the present invention.

For the foregoing reasons, the rejection of claims 10, 12, 14-15, and 18 under 35 U.S.C. § 103(a) over the admitted prior art in light of Treat should be overcome. Reconsideration and allowance of claims 10, 12, 14-15, and 18 is therefore requested.

The Examiner has also rejected dependent claim 13 under 35 U.S.C. § 103(a) by asserting that the prior art discloses in Fig. 5 a buffer layer 102. Applicant respectfully requests that claim 13 is allowable at least by virtue of its dependency on claim 10, which is amended herein and is currently in condition for allowance, for the reasons stated above. Thus, claim 13 is also in condition for immediate allowance.

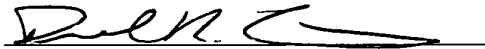
The Examiner has further rejected dependent claims 16-17 under 35 U.S.C. § 103(a) by asserting that Treat discloses the (AlGa)InP compound (col. 6, l. 19). Applicant respectfully requests that claims 16-17 are allowable at least by virtue of their dependency on

claim 10, which is amended herein and is currently in condition for allowance, for the reasons stated above. Thus, claims 16-17 are also in condition for immediate allowance.

Thus, in light of the above remarks and amendments, Applicant asserts that claims 10 and 12-18 clearly distinguish over the teachings of the prior art in light of Treat and therefore overcome the rejections under 35 U.S.C. § 103(a). Reconsideration and immediate allowance of claims 10 and 12-18 is therefore requested.

If a conference would expedite prosecution of the instant application, the Examiner is hereby invited to telephone the undersigned to arrange such a conference.

Respectfully submitted,



Donald R. Studebaker
Registration No. 32,815

NIXON PEABODY LLP
401 9th Street, N.W.
Suite 900
Washington, D.C. 20004-2128
(202) 585-8000

DRS/SMH